A Field Experiment to Evaluate Various Outcomes of Continuity of Physician Care

MARSHALL H. BECKER, PhD, MPH
ROBERT H. DRACHMAN, MD
JOHN P. KIRSCHT, PhD

An experimental approach was used to evaluate and compare two methods of organizing ambulatory care in a pediatric clinic. Both staff and patients expressed greater satisfaction with the pediatric clinic designed to provide continuity of physician care than with the conventional "sequential" clinic.

Introduction

The need to provide "continuity of care" is a basic public health and medical care tenet, a fundamental component of "comprehensive health services," and a sine qua non to what is currently viewed as "good" medical care.[1-5] Thus, the National Commission on Community Health Services argues that: "Every individual should have a personal physician who is the central point for integration and continuity of all medical and medically related services to his patient... His concern will be for the patient as a whole, and his relationship with the patient must be a continuing one."[6]

Physician continuity is hypothetically held to be the system preferred by both physicians and patients, resulting in greater efficiency and increased satisfaction.[7] Unfortunately, writings in support of these putative benefits are mostly anecdotal in nature, and reviewers of literature in this area (e.g., Bergman[8] and Fink et al.[9]) report that research findings on the outcomes of a continuity system are generally weak, inconsistent, and often mutally contradictory.

On the positive side, physicians and ancillary medical personnel appear to be more satisfied in continuity settings,[10,11] and clinic patients are often found to be happier when they can see the same physician on return visits.[12] However, several studies[10,13] have determined that the relationship between patient satisfaction and continuity is strongly influenced by the patient's social class and type of medical problem; the higher the social class, the greater the distress evoked by lack of continuity, and patients with chronic illnesses are more desirous of continuity than are those with acute health problems.

Perhaps the most convincing evidence is provided by a

Dr. Becker is Associate Professor, Departments of Pediatrics and Behavioral Sciences, The Johns Hopkins University School of Medicine and School of Hygiene and Public Health. His mailing address is Edwards A. Park Building, Room B172, The Johns Hopkins Hospital, 601 North Broadway, Baltimore, Maryland 21205. Dr. Drachman is Associate Professor, Department of Pediatrics, The Johns Hopkins University School of Medicine. Dr. Kirscht is Professor, Program in Health Behavior, The University of Michigan School of Public Health, Ann Arbor, Michigan. This research was supported by Grant 5-R18-HS00237 from the National Center for Health Services Research and Development.

large and complex study[12,14] comparing psychosocial and cost factors under conditions of comprehensive versus fragmented pediatric care. This research concluded that physician continuity permits the doctor to become well acquainted with the patient's problems and needs, leading in turn to relatively lower rates of ordered laboratory tests, illness visits, and hospitalizations. Additional supportive data are found in research on factors influencing a mother's adherence to medical therapies for her child, which yield positive correlations between physician continuity and both compliance with prescribed regimens[15-18] and keeping follow-up appointments.[18-20] Other studies have examined the possible ameliorative affect of continuity of physician on compliance behavior in adult populations.[21-23]

On the other hand, some attempts to assess continuity arrangements have been unable to demonstrate this system's superiority to traditional, episodic care. Here, the leading empirical investigation consisted of two controlled studies,[24] one of 220 infants of primiparous adolescents, and the other of 77 children on penicillin prophylaxis for rheumatic fever. In each group, patients were randomly allocated to either a traditional care or a continuous care setting, with assessment after 12 to 15 months. After reviewing such variables as completeness of immunization, utilization of medical resources, morbidity, and compliance with physicians' recommendations, the investigators concluded that no measurable difference could be found between patients who experienced continuous pediatric care and those who received regularly available episodic ambulatory care.

A few authors have presented negative findings which relate to the continuity question. For example, in a survey of different population groups which sought to determine the relative priorities they placed on 11 aspects of comprehensive care, "emergency services" and "care available 24 hours a day" were found to be the top two priority items, while "seeing the same physician or group on each visit" was always ranked lowest.[25] Other studies have also been unable to demonstrate that "continuous" care results in enhanced child health.[26] Some research has even reported positive response to *lack* of physician continuity; this feeling was expressed by patients who thought that "all physicians are equally competent," or who felt that there might be some benefit in obtaining the skills and opinions of more than one physician.[10,13]

Two central difficulties have hampered attempts to ascertain the efficacy of physician continuity. First, despite the almost universal faith in this approach (and the higher costs it may entail), there have been very few empirical investigations of continuity structures.[27,28] Second, those studies with controlled designs have either been limited to particular medical populations or problems,[24,25] or have had to employ control populations of staff or patients that were not comparable to their counterparts in the experimental (continuity) setting.[14]

It is well known that members of low income populations are at greatest risk of experiencing discontinuous care particularly with regard to receiving primary medical services from the same physician for a reasonable period of time.[13,14,29,30] Many broad and expensive programs have been established (e.g., OEO neighborhood health centers, Children and Youth projects) on the basis of a perceived need to "correct" this discontinuity. Thus, data which relate to evaluation of the medical, structural, and sociobehavioral effects resulting from continuity systems would assist planners in the formulation of public health and medical care policy. As Gordis and Markowitz[24] note: "The increasing recognition of the inadequacy of health care available to low income groups has prompted the initiation and expansion of many . . . programs to provide total health care and a continuous relationship of the patient either to a physician or to a health team as a whole. Such programs have been predicated on the assumption that the end results of such care will be superior to those which can be achieved with traditional clinic programs. However, the evidence to substantiate this assumption is generally lacking. Since such programs are costly and administratively difficult to implement, it is necessary to critically evaluate whether comprehensive and continuous care is more effective than traditional methods."

This paper presents data from a large research project which examined the effects of delivering ambulatory care for children from low income families by two methods: the traditional, episodic clinic and a clinic structured to provide continuity of physician.

Methodology

It was decided that only a completely experimental design would enable the investigators to both deal with the issue of generalization (a problem in the studies cited above) and to enable causal attribution of any differences in outcome measures to differences in clinic orgainzation. Therefore, after stratification on family size and prior clinic experience, all patient families of a large Children and Youth project were randomly assigned to either: (1) a "conventional" multistation clinic (the study control group) in which the patient is linked with the first available physician; and (2) a "panel" clinic (the study experimental group) consisting of four modules, each with a team of one pediatrician and a permanent supportive staff, where continuity of physician was maintained by having the patient see only his assigned pediatrician on each return visit. All of the medical and administrative staff were similarly randomly allocated.

Every attempt was made to ensure that the two settings were comparable on all dimensions except physician continuity. Both clinics were located on the same floor of a pediatric outpatient facility, and both provided identical, free comprehensive health care services. The clinics began with, and maintained, the same patient-load-per-physician ratios. Subsequent data analyses demonstrated that no statistically significant differences existed between clinics on: staff age, sex, training, prior work experience, scores relating to perceptions of clinic goals, and attitudes toward organization of care; or clients' age, education, marital and working status, occupational and

geographic mobility, family size, prior clinic experience, and amount of personal problems.

These study conditions were maintained for a period of 1 year. All physicians, ancillary staff, and a random sample of 125 mothers from each clinic were interviewed during study months 9 through 12. Staff were also asked to complete self-administered questionnaires.

Data gathered from staff included a very wide variety of background, training, structural, and psychosocial variables, especially in terms of perceptions of the clinic and its clients. The hour-long interview of the mother (all but 10 of whom were black) covered feelings about quality of care, the doctor-patient relationship, views of clinic procedures, and a variety of health attitudes and beliefs.

Mean scores were computed on every variable for each study clinic, and differences between clinic scores were examined for statistical significance by both parametric (Student's t) and nonparametric (Mann-Whitney U) tests. These test results (conducted at the $p \leqslant 0.05$ level) are reported separately in the tables that follow.

Results

Staff Satisfaction

Findings which contrast levels of staff satisfaction in the conventional and experimental clinics are presented in Table 1 under three headings: general measures; patient-practitioner measures; and staff perceptions of clients.

It is apparent that, on every dimension of satisfaction studied, staff in the experimental clinic report more positive appraisals than do staff in the control setting. Beyond overall satisfaction, panel clinic physicians were more likely than their counterparts in the conventional clinic to give high ratings to the quality of their experience in the clinic, and to agree that it was close to what they had anticipated prior to working in the clinic. These doctors were also relatively more likely to feel that it would be fairly easy to find other employment if they discontinued their present work.

In contrast, the staff of the conventional clinic

TABLE 1—Mean Scores for Various Dimensions of Staff Satisfaction, by Method of Organizing the Delivery of Care

Staff Satisfaction Measure*	Mean Scores				Statistical Significance of Difference†	
	Conventional clinic (no continuity)	(N)	Panel clinic (continuity)	(N)	t-test	Mann-Whitney U
General measures						
Overall satisfaction*	2.41	(17)	3.60	(20)	Yes	Yes
Quality of experience in clinic (MD only)	3.50	(8)	4.00	(7)	No	Yes
Correspondence to expectations prior to working in clinic (MD only)	3.75	(8)	4.29	(7)	No	Yes
Projected ease of finding other employment after this experience (MD only)	4.43	(7)	5.00	(7)	No	Yes
Opportunity to perform at optimal level*	2.93	(17)	3.76	(20)	Yes	Yes
Perceived quality of patient care	3.12	(17)	4.25	(20)	Yes	Yes
As conducive to good care as private practice	3.06	(17)	3.60	(20)	No	No
Time for patient care more limited than in a private practice	3.71	(17)	3.21	(20)	No	No
Perceived level of clinic efficiency	3.24	(17)	4.12	(20)	Yes	Yes
Ability to see patients get better as result of your work	4.00	(17)	4.50	(20)	Yes	Yes
Patient-practitioner measures						
Doctor-mother relationship	3.29	(17)	4.00	(20)	Yes	Yes
Doctor-mother relationship (MD only)	4.12	(8)	4.75	(8)	Yes	Yes
Relationship as satisfying as in private practice	2.41	(17)	3.60	(20)	Yes	Yes
Length of time concerned with patient (MD only)	2.25	(8)	3.43	(7)	Yes	Yes
Frequency of worry about patients after clinic hours* (MD only)	3.13	(8)	3.43	(7)	No	Yes
Staff perceptions of clients						
Probability of mothers' compliance with regimens and appointments	3.10	(17)	3.67	(19)	Yes	Yes
Mothers who don't keep appointments haven't tried to come	3.29	(17)	2.37	(19)	Yes	Yes
Clients are "good mothers"	2.88	(17)	3.79	(19)	Yes	Yes
Clients are above average in interest and concern for their children	1.88	(17)	3.05	(19)	Yes	Yes

* All measures are based on Likert-type strength-of-agreement scales of 5 points except those indicated (*) which are 4-point scales.
† Statistical significance of all differences tested at $p \leqslant 0.05$.

reported less opportunity "to do as good a job as you feel you could," and gave comparatively lower ratings to the quality of patient care in their clinic. Part of this dissatisfaction may be derived from the respondents' unfavorable comparisons of their clinic with the typical private practice; however, while there was a tendency to favor the latter in terms of quality of care and time spent with patient, the differences between clinics in mean scores were not statistically significant.

A higher level of satisfaction probably influences perceptions of any aspect of the setting in a more favorable direction, and tends to facilitate interpersonal interaction. Further, only a continuity system enables the physician to follow the course of the patient's illness and recovery over time. For both of these reasons, it is not surprising to find that staff in the continuity group were more satisfied with the level of clinic efficiency, and with their ability to see patients get better as a result of their work.

A continuity structure appears also to permit establishment of better doctor-patient relationships. Panel clinic physicians (as well as other panel staff) were found to hold more favorable perceptions of their interactions with patients' mothers, and were more likely than staff of the conventional clinic to rate these interactions as being as satisfying as those which exist in private practice. Moreover, panel physicians reported a relatively longer time period of concern with their patients, and stated more often that they worry about their clinic patients after working hours.

These more satisfying interactions seem to induce more favorable staff perceptions of their clients. Thus, the panel staff were more prone to believe that their clinic mothers would comply with prescribed regimens, and would try to keep follow-up appointments; they were even more likely than the conventional clinic staff to label their clients as "good mothers," and to rate these mothers as "above average" in interest and concern for their children.

Perceptions of Organizational Structure

Students of "organizational behavior" are often concerned with the ways in which variations in the structure of the organization may yield differences in the staff's perceptions of freedom from organizational influence ("autonomy"), type of supervision and activities ("flexibility"), and control over scope and content of work ("role conflict"). Further, these variables are known to affect the degree to which the staff feels that they are in agreement concerning the goals of the organization, and the means employed to reach these ends. The study's findings on these dimensions are presented in Table 2.

This research employed measures of autonomy based on a scale created by Engel[31]; they require staff to estimate how often they are able to make their own work decisions (e.g., "You have the deciding voice in policy changes or decisions affecting your own job," "Changes or alterations

TABLE 2—Mean Scores for Measures of Perceived Autonomy, Flexibility, and Conflict, by Method of Organizing the Delivery of Care

Staff Perceptions*	Mean Scores: Conventional clinic (no continuity)	(N)	Mean Scores: Panel clinic (continuity)	(N)	Statistical Significance of Difference†: *t*-test	Statistical Significance of Difference†: Mann-Whitney *U*
Autonomy						
Autonomy (MD only)	3.71	(8)	3.83	(7)	No	No
Autonomy (other staff)	2.89	(9)	4.25	(12)	Yes	Yes
Ability to work independently (other staff)	1.33	(9)	2.83	(12)	Yes	Yes
Flexibility						
Amount of rules and closeness of supervision	3.55	(17)	3.01	(19)	Yes	No
Little action until supervisor approves	2.77	(17)	2.16	(19)	Yes	No
Amount of division of labor (variety)	2.87	(17)	3.37	(19)	Yes	No
Conflict						
Desire to perform "acute illness" activities differently	2.00	(16)	1.35	(17)	Yes	No
Desire to perform "follow-up of patients" activities differently	1.73	(15)	1.12	(17)	Yes	No
Total "desire to perform activities differently" *score*	0.39	(15)	0.20	(17)	Yes	Yes
Average conflict *score* (across activities, preferred roles, and role expectation scores)	0.35	(15)	0.23	(17)	Yes	Yes
Consensus						
Staff see eye-to-eye on matters of everyday operation of clinic (other staff)	2.67	(9)	3.92	(12)	Yes	Yes
Consensus on means used to accomplish clinic objectives	2.12	(17)	3.21	(19)	Yes	Yes

* All measures are based on Likert-type strength-of-agreement scales of 5 points.

† Statistical significance of all differences tested at $p \leq 0.05$.

TABLE 3—Mean Scores for Various Dimensions of Patient Satisfaction, by Method of Organizing the Delivery of Care

Patient Satisfaction Measure	No. of Scale Points	Mean Scores: Conventional clinic (no continuity)	(N)	Mean Scores: Panel clinic (continuity)	(N)	Statistical Significance of Difference*: t-test	Statistical Significance of Difference*: Mann-Whitney U
Average satisfaction scores							
Clinic procedures	2	1.82	(122)	1.96	(121)	Yes	Yes
Staff-patient interrelations	2	1.88	(122)	1.97	(121)	Yes	Yes
Perceived quality of care	2	1.92	(122)	1.99	(121)	Yes	Yes
Total satisfaction score (across all scores)	2	1.91	(122)	1.96	(121)	Yes	Yes
Specific items							
MD's certainty about the diagnosis	3	2.67	(118)	2.77	(119)	No	Yes
Sometimes the MDs don't know what to do about a problem	3	1.41	(122)	1.08	(121)	Yes	Yes
How much will following the MD's advice help	4	3.79	(107)	3.97	(114)	Yes	Yes
How much will returning for follow-up visit help	4	3.89	(97)	3.93	(93)	No	No
Old-fashioned remedies are sometimes better than what MD prescribes	4	2.41	(119)	2.27	(122)	No	Yes
Enough time spent by MD with child	2	1.94	(121)	1.99	(120)	Yes	Yes
Sometimes the MDs don't tell me exactly what to do	3	1.29	(122)	1.10	(121)	Yes	Yes
The MDs are too busy to give me personal attention	3	1.15	(121)	1.05	(121)	No	Yes
Index (positive view of MD)	4	3.23	(97)	3.49	(93)	Yes	Yes

* Statistical significance of all differences tested at $p < 0.05$.

in your schedule are made without consulting you"). These questionnaires were used successfully in an earlier study which compared staff views of organization structure in each of six Children and Youth clinics.[32,33]

No significant differences were found between clinics in physician perceptions of autonomy; this may be due to the relatively high degree of freedom from organizational control experienced by physicians in most bureaucratic settings. However, ancillary staff in the conventional clinic reported a much lower level of decision-making latitude than did those in the panel clinic. Also, as the flexibility of the panel mode required fewer rules and less supervision, continuity personnel were able to engage in a greater variety of activities, and panel staff agreed more often with the statement that "I am able to work independently, without undue interference."

This theme continues in the data on perceived flexibility. Conventional clinic personnel indicated that there were more rules and regulations to be followed, and that supervision was more extensive; they felt (more often than did the panel staff) that "There can be little action until my supervisor approves the decision," and participated in a smaller variety of tasks.

Indexes of role conflict (also used in previous clinic studies[32,33]) were developed from techniques used by Kahn and his colleagues.[34] These questions measured discrepancies between an individual's preferred clinic role and actual role; preferred clinic role and expectations of his role that he attributes to other staff; and expectations of the roles of other staff and his perceptions of their actual behavior. The first dimension was measured by presenting the staff member with a standard list of clinical activities[35] and asking, for each activity, "Would you like to continue to do (that activity) exactly the way you are now doing it, or would you prefer to do it in any way differently."

It is evident from Table 2 that staff in the conventional clinic were much more desirous of making changes in the way they performed their acute care, follow-up, and other activities. Indeed, the conventional clinic's average conflict score (which included all of the role conflict measures) was far above that obtained for the panel mode.

Finally, respondents were asked to rate the extent to which there was agreement among staff concerning means used to accomplish the clinic's objectives; results show a significantly higher level of staff consensus in the continuity setting, where staff felt that "People in different jobs see eye-to-eye on matters of everyday operation of the clinic."

Patient Satisfaction

The greater degree of satisfaction held by continuity clinic staff is mirrored in the relatively more favorable comments attributed to that clinic by its client population. Data in Table 3 show that panel mothers were significantly more satisfied with the clinic's procedures (e.g., waiting time, seeing the same doctor on each visit), relationships

with staff (e.g., personal interest shown by doctors, nurses, registrars), quality of care (e.g., medical equipment, quality of doctors and nurses, "the kind of care your child gets here"), and across all satisfaction scores.

Just as the panel physicians held their clients in relatively higher esteem, mothers in the continuity setting consistently gave higher appraisals to these physicians' abilities to diagnose, treat, prescribe, give helpful advice, and explain exactly what she must do for her child. The continuing relationship also seems to make the mother feel that she and her child are receiving requisite amounts of time and personal attention; in fact, the only nonsignificant difference was found on the dimensions of "helpfulness of returning for the follow up visit" (if any), and even here the figures are in the anticipated direction.

A series of "yes or no" questions was created to tap various aspects of patient satisfaction more indirectly and covertly, and responses elicited by these questions appear in Table 4. Respondents in both settings differed little in reporting that other clinic mothers they knew were satisfied with their children's care, but more mothers in the experimental than in the conventional clinic felt that the medical care offered was better than treatment they had obtained in other places; further, the panel clients were less likely to disagree with diagnosis made by the physician on this visit, and more likely to feel that the medicine prescribed would help.

Perhaps most important, however, are those questions which bear more directly upon the continuity variable. While panel mothers did not telephone the clinic with significantly greater frequency than did those on the conventional side, the former group did feel that the information they received was more helpful. Those in the experimental group were also far more likely to believe that, if they met the physician they saw today on some future occasion, he would remember their name and the name of their child. Also, when given a choice of a shorter wait and the first available physician versus a longer wait to see the same physician, respondents in the panel clinic were much more likely to choose the continuity option.

Mothers on the panel side were more likely to have experienced "continuity of nurse." This study did not attempt to evaluate the differential contributions to patient satisfaction of continuous relationships with medical staff other than the physician. This matter is certainly worthy of further investigation, particularly in view of the many suggestions that such a role for nurses may be especially important in the absence of a continuous physician-patient relationship.[24,36,37]

Finally, clients in each setting were asked whether they were satisfied with the particular physician assignment pattern in their clinic. Findings revealed that about half of the mothers in the conventional clinic felt that they would prefer to see the same physician on each visit, while almost all of the clients in the panel clinic were satisfied with the continuity arrangement.

Mothers' Health Beliefs

Although an earlier study[12] reported that physician continuity seemed to have little or no influence on patients' general health or other nonmedical attitudes, the present research included the hypothesis that the better doctor-patient relationship afforded by physician continuity would

TABLE 4—Percentages for Various Dimensions of Patient Satisfaction, by Method of Organizing the Delivery of Care

Patient Satisfaction Measure	Direction of Percentage	Percentages: Conventional clinic (no continuity)	(N)	Percentages: Panel clinic (continuity)	(N)	Difference Statistically Significant*
Are other mothers you know satisfied or dissatisfied with the care	Satisfied	87.7	(71)	92.9	(79)	No
Is clinic better or worse than other places child obtained medical care	Same or better	85.0	(102)	95.1	(115)	Yes
Disagrees with MD's diagnosis	Yes	12.3	(14)	1.8	(2)	Yes
Medicine prescribed will help	Yes	80.9	(100)	94.6	(110)	Yes
Do you ever telephone the clinic	Yes	74.4	(90)	80.3	(98)	No
—And are the phone conversations helpful	Yes	89.8	(79)	99.0	(96)	Yes
Would MD you saw today remember your name if you met	Yes	31.5	(35)	78.9	(86)	Yes
—And would he remember that your child was his patient	Yes	72.7	(88)	94.2	(113)	Yes
Same nurse usually sees child	Yes	46.1	(78)	69.1	(88)	Yes
Would rather wait less and see first available MD, or wait longer and see same MD	Wants same MD	71.4	(80)	92.4	(109)	Yes
Satisfaction with seeing first MD available instead of same MD each visit (conventional clinic only)	Yes	49.2	(59)	–	–	–
Satisfied with seeing same MD each visit instead of first MD available (panel mode only)	Yes	–	–	99.2	(120)	–

* Statistical significance of all differences tested at $p < 0.05$.

exert positive effects on health-related beliefs and motivations shown in other studies to be associated with patient compliance with regimens and follow-up appointments.[16,38] Indexes pertaining to these dimensions are displayed in Table 5.

Mothers in the experimental group were more likely to report engaging in activities "to protect health," and scored significantly higher on an index of health motivation (e.g., "I work at keeping healthy and fit," "I really try to avoid illness"). Further, panel mothers exhibited a higher degree of concern about their children's health, resulting in an elevated (but not significantly) "health worry" index (e.g., "Nowadays, there is more danger to children from disease and accidents than ever before," "I worry a lot about my child's health"), and in the taking of health-related actions thought to be "preventive" of illness (e.g., giving the child vitamins regularly).

However, panel mothers tended to be more dependent on the medical care system. In terms of the "self-reliance" index (the lower the score, the greater the self-reliance), respondents in the continuity setting more often reported that, for example, when the child was sick, they usually took him to the doctor rather than taking care of the problem themselves. Also, these mothers see illness as potentially more disruptive of the child's activities, and have a heightened sense of their child's vulnerability to disease (e.g., "When I hear about some disease, I think my child might get it"). Finally, mothers experiencing continuity tend toward higher utilization of all of the clinic's services (as well as of other hospital clinics), and disagreed more often with a scale of five negative items concerning clinic physicians (e.g., "Sometimes, the doctors here don't seem to know what to do about a problem," "The doctors here are not concerned about the mother's feelings").

System Performance

In addition to the psychosocial variables discussed above, data were also gathered which allowed the experimental (continuity) and conventional clinics to be compared along some dimensions of technical performance, and these findings are reported in Table 6.

TABLE 5—Mean Scores for Various Indexes of Patient Health Beliefs, by Method of Organizing the Delivery of Care

Health Belief Index	Mean Scores: Conventional clinic (no continuity)	(N)	Mean Scores: Panel clinic (continuity)	(N)	Statistical Significance of Difference (*t*-Test)*
"Tries to protect health"	3.68	(122)	3.82	(122)	Yes
Health motivation index	17.55	(117)	18.30	(122)	Yes
"Concern about child's health"	3.22	(122)	3.35	(122)	Yes
Health worry index	9.87	(121)	10.16	(121)	No
"Give child vitamins regularly"	1.53	(122)	1.95	(122)	Yes
Self-reliance for health care index	7.57	(119)	8.79	(122)	Yes
Threat of illness index	9.78	(120)	10.25	(121)	Yes
Medical care index	8.38	(117)	9.60	(121)	Yes
Positive response to MD index	9.20	(120)	9.46	(121)	Yes

* Statistical significance of all differences tested at $p < 0.05$.

TABLE 6—Mean Scores for Various Dimensions of System Performance by Method of Organizing the Delivery of Care

Performance Measure	Mean Scores: Conventional clinic (no continuity)	Mean Scores: Panel clinic (continuity)	Statistical Significance of Difference (*t*-Test)*
Actual patient waiting time (min)	55.71	42.95	Yes
Actual patient time with physician (min)	9.13	12.20	Yes
Behavior problems disclosure rate	0.029	0.049	Yes
Appointment-keeping ratio	0.689	0.785	Yes
Routine care audit	32.057	32.588	No

* Statistical significance of all differences tested at $p < 0.05$.

During the study year, clinic registrars recorded both the time the mother checked into the clinic and the time at which she was called by the physician. Clinic physicians also recorded starting and completion times for each visit. Thus, it was possible to calculate mean waiting times and time-with-physician scores for each clinic. Contrasts in Table 6 reveal that clients in the continuity setting experienced significantly shorter waiting times, yet spend somewhat more time with the physician. These "hard data" findings fit well with higher level of satisfaction of these dimensions reported by the continuity clinic mothers.

The investigators had hypothesized that, if seeing the same physician results in a better, more intimate doctor-patient relationship, then a mother in the continuity clinic should be more likely to: (1) discuss embarrassing behavior problems that her child may be experiencing; and (2) try harder to keep follow-up appointments.

Charts were audited for the disclosure of behavior difficulties (e.g., disorders, hyperactive behavior, learning problems), and rates were computed for each clinic. In addition, a measure of appointment behavior was calculated for each child by dividing the number of appointments kept by the number of appointments made during the study period. It is clear from Table 6 that panel mothers were significantly more likely to report behavior problems to the physician and to keep follow-up appointments.

Medical records in both clinics were also reviewed to determine extent of completeness of routine well-child care delivered. Charts were audited relative to immunizations (D.P.T., polio, measles) and tests (tuberculosis, hemoglobin and hematocrit, urinalysis), and average scores were computed for each setting. While the clinic differences were not statistically significant, the trend was in favor of greater completeness in the panel clinic.

Discussion

These study results seem to provide substantial empirical support for the argument that, other things being equal, continuity of physician exerts a positive effect on staff and patient attitudes and behaviors. Further, although a convincing case might be made that such outcomes as satisfaction and better doctor-patient relationships are critical ends in themselves, it is significant that this research was also able to demonstrate associations between continuity of care and improved efficiency, better appointment-keeping, and greater disclosure of personal problems to the physician.

Perhaps most important are the results concerning the continuous doctor-patient relationship's influence on the mother's health beliefs. It has been known for some time that various aspects of *affective* communication between physician and patient influence subsequent patient behaviors (e.g., compliance),[16] and that such psychosocial dimensions as "medical dependence," "illness threat," and "health motivation" are also related to such behaviors. The present findings, which link physician continuity to modified health beliefs, may therefore help to explain why other studies have found better compliance rates among patients who experienced continuous physician care.[18]

Several suggestions may be advanced to attempt to explain the more positive outcomes produced by physician continuity. Since medical training encourages the physician to maintain (and derive both intellectual and personal satisfaction from) a continuing relationship with the patient, there is likely to be less professional dissonance in a setting that maximizes continuity. On the other hand, this relationship was also shown to be more gratifying for a client population without expectations of, or prior experience with, physician continuity, suggesting that there must be elements in the relationship itself that are satisfying. Perhaps, as Alpert et al. suggest, the absence of a single physician providing continuous services "precludes the development of any relationship between doctor and patient,"[27] leading to fragmentation of care, lack of coordination, and the loss of human dignity which often occurs in the anonymity of many public clinics.[12]

There probably also exists, in the continuous relationship, a cycle of beneficial mutual reinforcement, wherein the staff's greater satisfaction is communicated to the patient, and the patient's reciprocal warmth and higher level of interest, disclosure, and cooperation results in a happier staff. Clearly, there is a need for further research both to untangle these causal relationships and to identify more precisely those elements of physician continuity which yield the kinds of positive outcomes obtained in this study.

Summary

This study examined various outcomes resulting from two different methods of organizing the provision of ambulatory health and medical care. Using a field experiment design, all patient families and medical staff of a large Children and Youth project were randomly assigned to the following care systems: a conventional "sequential" clinic emphasizing continuity of records and linking the patient with the first available physician; and four medical "panels," each with one pediatrician and a permanent supportive staff, emphasizing physician continuity by having the patient see only his assigned doctor on each return visit.

Results indicated that the physician continuity of the panel clinic produced greater staff satisfaction, both on a general level and in the specific areas of perceived autonomy and authority, role conflict, shared perceptions, doctor-patient relationships, bureaucracy measures, staff interrelationships, and perceived ability to provide the best possible care.

Patients' mothers were also more satisfied with the panel arrangement, especially with clinic procedures, relationships with staff, and perceived quality of the child's treatment. Continuity clinic mothers also experienced shorter waiting times, spent more time with the physician, and were more likely to report their child's behavior problems and to keep follow-up appointments.

A physician-continuity structure also appeared to exert

an ameliorative effect on mother's health beliefs and motivations. Thus, panel mothers were more likely to be concerned about the child's health and his susceptibility to illness, to utilize facilities and services, and to depend upon the clinic physician for medical assistance.

It is suggested that further research be directed toward determining more exactly which dimensions of physician training, client expectation, and the doctor-patient interaction are enhanced by providing continuity of physician care.

References

1. Donabedian, A. Evaluating the Quality of Medical Care. Milbank, Mem. Fund Q. (Part 2) 44:166—203, 1966.
2. Haggerty, R. J. The University and Primary Medical Care. N. Engl. J. Med. 281:416—422, 1969.
3. Vorzimer, J. J., and Katz, G. Toward Comprehensive Ambulatory Care: A Case History of Decisive Change. Med. Care 8:76—81, 1970.
4. American Medical Association. Meeting the Challenge of Family Practice: Report of the Ad Hoc Committee on Education for Family Practice, pp. 30, 46, 49—50. American Medical Association, Chicago, 1966.
5. Ruhe, C. H. W. The Educator. J. Med. Educ. 45:473—481, 1970.
6. Health is a Community Affair. Report of the National Commission on Community Health Services, p. 21. Harvard University Press, Cambridge, 1966.
7. Haggerty, R. J. Present Strengths and Weaknesses in Current Systems of Comprehensive Health Services for Children and Youth. Am. J. Public Health 60:74—98, 1970.
8. Bergman, A. B. (ed.). Assessing the Effectiveness of Child Health Services. Report of the Fifty-Sixth Ross Conference on Pediatric Research. Ross Laboratories, Columbus, 1967. Cf. articles by K. L. White (p. 66) and J. Elinson (p. 77).
9. Fink, D., Malloy, M. J., Cohen, M., Greycloud, M. A., and Martin, F. Effective Patient Care in the Pediatric Ambulatory Setting: A Study of the Acute Care Clinic. Pediatrics 43:927—935, 1969.
10. Sussman, M. B., Caplan, E. K., Haug, M. R., and Stern, M: R. The Walking Patient: A Study in Outpatient Care. Western Reserve University Press, Cleveland, 1967.
11. Caplan, E. K., and Sussman, M. B. Rank Order of Important Variables for Patient and Staff Satisfaction with Outpatient Service. J. Health Hum. Behav. 7:133—137, 1966.
12. Alpert, J., Kosa, J., Haggerty, R. J., Robertson, L. S., and Heagarty, M. C. Attitudes and Satisfactions of Low-Income Families Receiving Comprehensive Health Care. Am. J. Public Health 60:499—506, 1970.
13. Schlesinger, R. H., Davis, C. D., and Milliken, S. O. Out-Patient Care—The Influence of Interrelated Needs. Am. J. Public Health 52:1844—1852, 1962.
14. Heagarty, M. C., Robertson, L. S., Kosa, J., and Alpert, J. J. Some Comparative Costs in Comprehensive versus Fragmented Pediatric Care. Pediatrics 46:596—603, 1970.
15. Charney, E. C., Bynum, R., Eldredge, D., Frank, D., MacWhinney, J. B., McNabb, N., Scheiner, A., Sumpter, E., and Iker, H. How Well Do Patients Take Oral Penicillin? A Collaborative Study in Private Practice. Pediatrics 40:188—195, 1967.
16. Francis, V., Korsch, B. M., and Morris, M. J. Gaps in Doctor-Patient Communication: Patients' Response to Medical Advice. N. Engl. J. Med. 280:535—540, 1969.
17. Wallace, H. M., Losty, M. A., Oliver-Smith, F., Azzaretti, L., and Rich, H. Study of Follow-Up of Children Recommended for Rheumatic Fever Prophylaxis. Am. J. Public Health 46:1563—1570, 1956.
18. Becker, M. H., Drachman, R. H., and Kirscht, J. P. A New Approach to Explaining Sick-Role Behavior in Low-Income Populations. Am. J. Public Health 64: 205—216, 1974.
19. Alpert, J. J. Broken Appointments. Pediatrics 34: 127—132, 1964.
20. Hansen, A. C. Broken Appointments in a Child Health Conference. Nurs. Outlook 1:417—419, 1953.
21. Curry, F. J. Neighborhood Clinics for More Effective Outpatient Treatment of Tuberculosis. N. Engl. J. Med. 279:1262—1267, 1968.
22. Finnerty, F. A., Jr., Mattie, E. C., and Finnerty, F. A., III. Hypertension in the Inner City. I. Analysis of Clinic Dropouts. Circulation 47:73—75, 1973.
23. Onstad, G. D., Sbarbaro, J. A., and Rotenberg, L. Post-Hospital Chemotherapy of the Unreliable Patient. Am. Rev. Respir. Dis. 101:258—264, 1970.
24. Gordis, L., and Markowitz, M. Evaluation of the Effectiveness of Comprehensive and Continuous Pediatric Care. Pediatrics 48:766—776, 1971.
25. Lewis, C. Does Comprehensive Care Make a Difference: What Is the Evidence? Am. J. Dis. Child. 122:469—474, 1971.
26. Silver, G. A. Family Medical Care. Harvard University Press, Cambridge, 1963.
27. Alpert, J. J., Heagarty, M. C., Robertson, L., Kosa, J., and Haggerty, R. J. Effective Use of Comprehensive Pediatric Care. Am. J. Dis. Child. 116:529—533, 1968.
28. Bass, R. D., and Windle, C. Continuity of Care: An Approach to Measurement. Am. J. Psychiatry 129: 196—201, 1972.
29. Goodrich, C. H., Olendzki, M. C., and Reader, G. G. Welfare Medical Care: An Experiment. Harvard University Press, Cambridge, 1970.
30. Morehead, M. A. Evaluating Quality of Care in the Neighborhood Health Center Program of OEO. Med. Care 8:118—131, 1970.
31. Engel, G. V. The Effect of Bureaucracy on the Professional Autonomy of the Physician. J. Health Soc. Behav. 10:30—41, 1969.
32. Nathanson, C. A., and Becker, M. H. Control Structure and Conflict in Outpatient Clinics. J. Health Soc. Behav. 13:251—262, 1972.
33. Nathanson, C. A., and Becker, M. H. Doctors, Nurses, and Clinical Records. Med. Care 11:214—223, 1973.
34. Kahn, R. L. Wolfe, D. M., Quinn, R. P., and Snoek, J. D. Organizational Stress: Studies in Role Conflict and Ambiguity. John Wiley, New York, 1964.
35. Council on Pediatric Practice of the American Academy of Pediatrics. Standards of Child Health Care. American Academy of Pediatrics, Evanston, Illinois, 1967.
36. Lewis, C. E., and Resnik, B. A. Nurse Clinics and Progressive Ambulatory Patient Care. N. Engl. J. Med. 277:1236—1240, 1967.
37. Starfield, B., and Sharp, E. Ambulatory Pediatric Care; The Role of the Nurse. Med. Care 6:507—515, 1968.
38. Becker, M. H., Drachman, R. H., and Kirscht, J. P. Motivations as Predictors of Health Behavior. Health Serv. Rep. 87:852—862, 1972.